

DRAFT INTERNATIONAL STANDARD

ISO/DIS 3008-4

ISO/TC 92/SC 2

Secretariat: ANSI

Voting begins on:
2020-08-25

Voting terminates on:
2020-11-17

Fire resistance tests — Door and shutter assemblies —

Part 4:

Linear joint fire seal materials used to seal the gap between a fire door frame and the supporting construction

ICS: 13.220.50; 91.060.50

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Reference number
ISO/DIS 3008-4:2020(E)

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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 92, *Fire Safety*, Subcommittee SC 2, *Fire containment*.

A list of all the parts in the ISO 3008 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This fire test method provides a methodology for testing linear joint fire seal materials intended to be used to seal the 'linear joint gap' between a fire door frame and the supporting construction.

This test methodology is only to be used to evaluate alternate linear joint fire seal materials used to seal the gap between a fire door frame and the supporting construction, if:

- a) The fire door frame, doors and supporting construction have already been successfully tested to ISO 3008-1 and the gap between the door frame and the supporting construction does not exceed 6 mm, provided the door and frame assembly does not permit the penetration of a gap gauge, as specified in ISO 834-1:1999, 8.4.2; or
- b) The fire door frame, doors and supporting construction have already been successfully tested to ISO 3008-1 and during the full scale fire resistance test, deflection of the supporting construction and the fire door frame was found to be less than 100 mm.

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Fire resistance tests — Door and shutter assemblies —

Part 4:

Linear joint fire seal materials used to seal the gap between a fire door frame and the supporting construction

CAUTION — The attention of all persons concerned with managing and carrying out this fire-resistance test is drawn to the fact that fire testing may be hazardous and that there is a possibility that toxic and/or harmful smoke and gases may be evolved during the test. Mechanical and operational hazards can also arise during the construction of the test elements or structures, their testing and disposal of test residues.

An assessment of all potential hazards and risks to health shall be made and safety precautions shall be identified and provided. Written safety instructions shall be issued. Appropriate training shall be given to relevant personnel. Laboratory personnel shall ensure that they follow written safety instructions at all times.

1 Scope

This standard test methodology and resulting field of direct application is applicable to linear joint fire seal materials used to seal around fire door sets which have been tested to ISO 3008-1.

This test methodology uses a smaller scale fire resistance furnace than that prescribed in ISO 3008-1.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3008-1, *Fire resistance tests — Door and shutter assemblies — Part 1: General requirements*

ISO 834-1, *Fire-resistance tests — Elements of building construction — Part 1: General requirements*

ISO 834-8, *Fire-resistance tests — Elements of building construction — Part 8: Specific requirements for non-loadbearing vertical separating elements*

ISO 834-12, *Fire resistance tests — Elements of building construction — Part 12: Specific requirements for separating elements evaluated on less than full scale furnaces*

ISO 10295-2, *Fire tests for building elements and components — Fire testing of service installations — Part 2: Linear joint (gap) seals*

ISO 13943, *Fire safety — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 834-1, ISO 834-8, ISO 3008-1, ISO 10295-1, ISO 13943 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at <http://www.electropedia.org/>

— ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1 associated supporting construction

specific construction in which the door or shutter assembly is installed as intended for use in practice and which is used to close off the furnace and provide the levels of restraint and thermal heat transfer to be experienced in normal use

3.2 standard supporting construction

form of construction used to close off the furnace and to support the door or shutter assembly being evaluated and which has a quantifiable influence on both the thermal heat transfer between the construction and the test specimen and provides known resistance to thermal distortion

3.3 fire seal

a seal designed to prevent the passage of fire or hot gases

3.4 joint seal

system designed to maintain the fire-separating function and, where required, to accommodate a specified degree of movement

3.5 splice

connection or junction within the length of a joint seal

3.6 test specimen

joint seal of specific materials, design and dimensions

4 Test equipment

4.1 Reduced Scale Furnace

The test equipment shall be as specified in ISO 834-1 and ISO 10295-1. A reduced scale furnace may be used provided the furnace is of sufficient size to accommodate a linear joint fire seal at least 900 mm in length. Guidance on the construction of reduced scale furnaces is provided in ISO 834-12.

In instances where the distance between anchors for the fire door frame exceeds 900 mm, the furnace used must be of sufficient size to test a length of linear joint fire seal equivalent to the maximum distance between door frame anchors.

4.2 Furnace Internal Dimensions

Test furnace, with internal dimensions such that a distance of at least 200 mm exists between the side or long edge of a linear joint and the furnace boundary, subject to a minimum internal size of 1 m × 1 m × 1 m for horizontal (floor) furnaces.

4.3 Vertical Furnace Dimensions

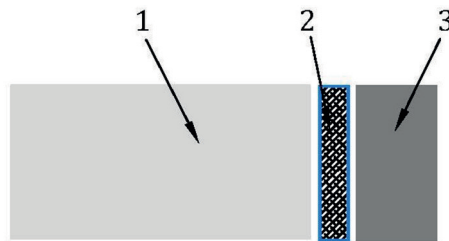
For vertical (wall) furnaces, the minimum internal size of the furnace shall be 1 m × 1 m and of sufficient depth to ensure that the temperature conditions specified in ISO 834-1 can be achieved, that the pressure conditions described in 6.2 can be achieved and that the test specimen is not subject to direct flame impingement at any time during the conduct of a test.

5 Test specimen

5.1 General

The specimen shall consist of a section of the supporting construction, the fire door frame and the linear gap seal.

5.2 A typical sample installation on a reduced scale furnace is shown in [Figure 1](#).



Key

- 1 supporting construction
- 2 linear joint fire stopping material
- 3 door frame

Figure 1 — Typical test sample configuration

5.3 Specimen size

Each test specimen shall be a minimum of 900 mm in length. In instances where the distance between anchors for the fire door frame exceeds 900 mm, the test specimen must be of a length such that the length of linear joint fire seal, door frame and supporting construction is at least equivalent to the maximum distance between door frame anchors.

Both a vertical and horizontal specimen of the same linear joint seal design and adjacent fire door frame and supporting construction shall be tested in all cases. The vertical portion to represent the fire door frame jamb and the horizontal portion to represent the fire door frame header portion.

The maximum intended joint fire seal width shall be tested.

The minimum intended door frame section width shall be tested.

The width of supporting construction shall at least be 300 mm.

5.4 Specimen Design

Any intended architrave materials shall be fitted over the linear joint seal and will become an additional component of the seal and the field of application will be limited.

5.5 Timber Door Frame Sections

The minimum intended timber density shall be tested.

Density and moisture measurements shall be taken prior to test.